

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1-31 are pending in the present application. Claims 1-2, 5, and 9 are amended. Claims 12-29 are withdrawn. Claims 30-31 are newly added. Support for the amendment to Claim 1 can be found in the specification as published at least at paragraph [0063]. Support for the amendments to Claims 2, 5, and 9 is self-evident. Support for newly added Claim 30 can be found in the specification as published at least at paragraph [0053], for example. Support for newly added Claim 31 can be found in the specification as published at least at paragraph [0065] and in Figure 8, for example. Thus, no new matter is added.

The outstanding Office Action objected to Claim 5 for informalities; rejected Claims 1 and 5-6 under 35 U.S.C. § 102(e) as anticipated by Kawamura et al. (U.S. Patent No. 2004/0148859, herein "Kawamura"); and rejected Claims 1-4 and 7-11 under 35 U.S.C. § 102(b) as anticipated by Kawamura et al. (U.S. Patent No. 2004/0025784, herein "Kawamura II").

In response to the objection to Claim 5 for informalities, Applicants respectfully note that the first "at" refers to the presence of the heater and the second "at" is part of the phrase "at least one of said first or second substrates," which refers to which substrate that is heater is provided. In other words, the joined body is provided with a heater at only the first substrate, at only the second substrate, or at both the first and second substrate. Accordingly, Applicants respectfully request the objection to Claim 5 for informalities be withdrawn.

Applicants respectfully traverse the rejection of Claims 1 and 5-6 under 35 U.S.C. § 102(e) as anticipated by Kawamura.

Amended independent Claim 1, recites, in part:

a catalyst carrying member disposed in said flow path  
and including a catalyst, said catalyst is supported independent  
of direct support of wall surfaces of said microchannel portion  
that define said flow path.

Thus, the catalyst carrying member that includes a catalyst, and the catalyst is supported independent of direct support of wall surfaces of the microchannel portion that define the flow path. In other words, the catalyst is not directly supported on the wall surface of the flow path. Applicants have recognized that one benefit of the above-noted feature is improved reaction efficiency since metal substrates with a high thermal conductivity can be used to efficiently transmit heat from the heater to the inside of the flow path without considering the catalyst supportability of the substrates.<sup>1</sup>

Turning now to the cited art, Kawamura describes a chemical reaction apparatus (100) with a flow path (13) formed on a surface of a first substrate (11). The outstanding Office Action asserts that the reaction catalyst layer (15) is a catalyst carrying member.<sup>2</sup> However, Kawamura fails to describe that the catalyst is supported independent of direct support of wall surfaces of the microchannel portion that define the flow path. Instead, Kawamura states:

A reaction catalyst layer 15 for performing a desired  
chemical reaction is **formed on the inner wall surface of the  
flow path** 13 in the first substrate 11.<sup>3</sup> (Emphasis added.)

In other words, as shown in Figure 2, the catalyst (15) in Kawamura is **directly supported** on wall surfaces of the microchannel portion that define the flow path. In contrast, amended independent Claim 1 recites that the catalyst is **supported independent of direct support** of wall surfaces of the microchannel portion that define the flow path.

---

<sup>1</sup> See published application at paragraph [0063].

<sup>2</sup> See outstanding Office Action at page 3.

<sup>3</sup> See Kawamura at paragraph [0066].

Accordingly, Applicants respectfully submit that amended independent Claim 1, and claims depending therefrom, patentably define over Kawamura. Therefore, Applicants respectfully request the rejection of Claims 1 and 5-6 under 35 U.S.C. § 102(e) be withdrawn.

In addition, Applicants respectfully traverse the rejection of Claims 1-4 and 7-11 under 35 U.S.C. § 102(b) as anticipated by Kawamura II.

As discussed above, amended independent Claim 1 recites a catalyst carrying member that includes a catalyst, and that the catalyst is supported independent of direct support of wall surfaces of the microchannel portion that define the flow path.

Turning now to the cited art, Kawamura II describes a compact chemical reactor with a micro groove (12) formed on a surface of a first substrate (11). The outstanding Office Action asserts that the reaction catalyst layer (13) is a catalyst carrying member.<sup>4</sup> However, Kawamura II fails to describe that the catalyst is supported independent of direct support of wall surfaces of the microchannel portion that define the flow path. Instead, Kawamura II states:

A reaction catalyst layer 13 is **provided on an inner wall surface** of the groove 12.<sup>5</sup> (Emphasis added.)

In other words, as shown in Figure 4, the catalyst (13) in Kawamura II is **directly supported** on wall surfaces of the microchannel portion that define the flow path. In contrast, amended independent Claim 1 recites that the catalyst is **supported independent of direct support** of wall surfaces of the microchannel portion that define the flow path.

Accordingly, Applicants respectfully submit that amended independent Claim 1, and claims depending therefrom, patentably define over Kawamura II. Therefore, Applicants respectfully request the rejection of Claims 1-4 and 7-11 under 35 U.S.C. § 102(b) be withdrawn.

---

<sup>4</sup> See outstanding Office Action at page 3.

<sup>5</sup> See Kawamura II at paragraph [0042].

Newly added Claims 30-31 each depend from amended independent Claim 1, and patentably define over the cited references for at least the same reasons that amended independent Claim 1 does.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



---

Bradley D. Lytle  
Attorney of Record  
Registration No. 40,073

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Christopher A. Bullard  
Registration No. 57,644

Scott A. McKeown  
Registration No. 42,866